

[54] POLYANHYDRIDES WITH IMPROVED
HYDROLYTIC DEGRADATION
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S. Langer, Somerville, both of Mass.[73] Assignee: Massachusetts Institute of
Technology, Cambridge, Mass.[*] Notice: The portion of the term of this patent
subsequent to Jul. 12, 2005 has been
disclaimed.

[21] Appl. No.: 80,631

[22] Filed: Jul. 31, 1987

[51] Int. Cl.⁴ A61K 31/74; C08G 63/00

[52] U.S. Cl. 424/78; 528/271

[58] Field of Search 424/78; 528/271

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[57] ABSTRACT

Polyanhydrides with uniform distribution of alkyl and aromatic residues are prepared by melt polycondensation or solution polymerization of p-carboxyphenox-yalkanoic acids or p-carboxyphenylalkanoic acids. These polymers are soluble in common organic solvents and have low melting points, generally in the range of 40°–100° C.

The polyanhydrides are especially well suited for forming bioerodible matrices in controlled bioactive compound delivery devices. A polymeric matrix formed according to the method described here degrades uniformly during drug release, preventing the wholesale channeling of the bioactive compound into the environment, and eliminating the problem of the presence of the polymer matrix at the site long after drug release. The polymer displays zero-order kinetic degradation profiles over various periods of time (days to months), at a rate useful for controlled drug delivery. Furthermore, a desired degradation rate may be obtained by choosing the appropriate length of the aliphatic moiety.

18 Claims, 3 Drawing Sheets

